

# **Materials Management Plan**

**BAE Systems Norfolk Ship Repair  
Norfolk, Virginia**

**October 15, 2012**

# MATERIALS MANAGEMENT PLAN FOR BAE SYSTEMS NORFOLK SHIP REPAIR

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# MATERIALS MANAGEMENT PLAN FOR BAE SYSTEMS NORFOLK SHIP REPAIR

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## 1. INTRODUCTION

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The United States Environmental Protection Agency (USEPA) issue a Statement of Basis (SB) for BAE Systems Norfolk Ship Repair (BAE NSR) in August, 2011 to solicit public comment on its proposed remedy. There were no comments received by USEPA during the thirty (30) day public comment period. USEPA issued its Final Decision and Response to Comments (FDRTC) for the BAE NSR facility on September 9, 2011. The final remedy for the facility was Corrective Action complete with controls. The FDRTC incorporated the SB, which details the selected remedy. The USEPA's remedy for the BAE NSR facility consists of the following two components:

- restricting the property to industrial use through compliance with and maintenance of institutional controls
- development and implementation of a Materials Management Plan.

BAE NSR is subject to the Corrective Action Program under the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act (RCRA) of 1976, and the Hazardous and Solid Waste Amendments (HSWA) of 1984, 42 U.S.C. Sections 6901 et seq.

The purpose of the Materials Management Plan (MMP) is to describe the facility's requirements before earth-moving activities (including construction and drilling) can occur at the facility in areas of known contamination identified during the RCRA Facility Investigation (RFI). These requirements are designed to control exposure to potentially hazardous constituents remaining in soils and groundwater and thus be protective of human health and the environment.

This MMP must be approved by the USEPA prior to implementation. Therefore, this MMP has been developed to meet the requirements of the SB. As required, this MMP includes the following:

- Site Diagram (indicating the known areas of potential contamination)
- Excavated Soils Management (how they are handled and disposed)
- Soil Stabilization Requirements, if needed
- Health and Safety Plan (HASP)
- Sampling, Analysis and QA/QC Plan (SAP)

The HASP and SAP are included as Appendices A and B, respectively.

The contents of this plan will be communicated to BAE NSR employees and contractors that work in areas where soil contamination has been identified. Employees and contractors will be notified of this MMP prior to soil-disturbing activities.

## 2. SITE DIAGRAM AND IDENTIFICATION OF CONTAMINATED SOIL LOCATIONS

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Figure 1 of this MMP is a site diagram (originally prepared in June 2007 as part of the RCRA Facility Investigation and Release Assessment (RFI/RA) that illustrates the site-wide monitoring wells (SWMWs), the release assessment monitoring wells (RAs) and pre-existing monitoring wells (E-MW). Figure 2 of the MMP is a

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site diagram that illustrates the two areas where soil contamination was identified during the RFI site investigation (SWMU 105 and RA-114).

In Section V of the August 2011 SB, the USEPA describes its evaluation of its proposed decision and lists in Section V.A. the threshold criteria. The SB report states that the primary human health and environmental concern posed by impacted soils at the Facility were related to direct contact with those soils. The SB report describes the locations of soil impacts and how the threshold criteria are either met or otherwise protective of human health and the environment.

According to the SB, only two locations of impact have been identified: SWMU-105 and RA-114. The zone of impacted soil is described as “below the surface at a depth ranging from 3 to 6 feet and is localized in horizontal and vertical extent.” Therefore, the proposed remedy of restricting the use of the property to industrial use is protective of human health and the environment.

All other areas investigated during the RCRA Facility Investigation indicated soils below the USEPA Region III Risk-Based Concentrations (RBCs) for industrial screening levels, or were remedied via excavation to the approval of the USEPA.

If at any time, including construction or earth moving activities, contaminated soil is found outside the SWMU 105 or RA-114 areas identified during the RFI, BAE NSR will notify USEPA and Virginia Department of Environmental Quality (VDEQ) within three (3) calendar days. Where contaminated soil contains levels above USEPA Region III Risk-Based Concentrations (RBCs) for industrial screening levels, an interim measures plan shall be submitted to USEPA and VDEQ. The MMP should be updated when any new or additional contaminated soil is discovered and remains on site. The VDEQ and USEPA should be sent an updated MMP.

### **3. EXCAVATED SOILS MANAGEMENT**

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BAE NSR employees conduct some minor excavation (and other land-disturbing activities). However, most projects are contracted to outside vendors. The Facilities Department contracts soil-disturbing activities based on the project, but would first evaluate the potential significant environmental impacts that each project might contribute.

BAE NSR employees and contractors may be required to conduct soil-disturbing activities. The most common are listed as follows:

- Re-grading surface materials
- Construction of a building
- Installing or removing utilities and roadways
- Landscaping.

BAE NSR’s procedure entitled “Identification of Environmental Aspects, Impacts and Determining Significance” requires a review of operations and activities to assess the environmental aspects related to any new projects or intended changes in operational practice. Therefore, the designated representative initiating the new activity or change must complete a Project Environmental Review Checklist (NOR-F(96)-V56).

The “Other Considerations” section of the Project Environmental Review Checklist includes the question “Does the project cause land disturbances?” If the “yes” box is checked for this item, the Environmental Department

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would review the project and inform the Facilities Department of required permits and the procedures as described in this MMP. A completed copy of the Checklist is maintained at the Environmental Department for at least three years.

BAE NSR's Environmental Department requests that soil removed during land-disturbing activities is placed in a roll-off container to promote the containment and disposal of such soils. The Environmental Department provides roll-off containers to BAE NSR employees and/or contractors upon receipt of a completed Roll-off Container Request Form NOR-F(96)-V56. This form must be completed by the BAE NSR department or contractor that is requesting the roll-off and delivered or faxed to the Environmental Department at a minimum of 24 hours prior to when the roll-off is required to be delivered or removed from the work site. The Environmental Department reviews the completed form and provides the appropriate sized roll-off based on the scope of the job, the amount of soil being removed, and the nature of the soil.

Soils that are excavated from areas that may contain constituents of concern (i.e., in the vicinity of SWMU-105 and RA-114) will be placed in a drum or roll-off container (based on the project). These soils are not to be staged on the ground where they can come in contact with stormwater or other materials. The Environmental Department will provide a plastic liner for the roll-off container, as well as a plastic liner to cover the excavated soil. The Environmental Department schedules and provides for sampling of the removed soils. This is coordinated with the representative requesting the roll-off so that samples are obtained at the appropriate times during the soil removal. Soil samples are sent off-site for analysis. This soil management process will also be followed for excavations in areas not expected to have soils contaminated with constituents of concern, but upon disturbance are found to contain petroleum residues or other suspected contaminants.

In accordance with the requirements of the August 2011 SB, soil that is placed in roll-off containers (or placed into drums) will be sampled using the Toxicity Characteristic Leachate Procedure (TCLP). Soils will be retained until testing results have been received and evaluated. Depending on the project, soil may be placed in 55-gal drums and staged at the Less than 90-day Waste Accumulation Area (WAA) while awaiting lab analyses or the soil may remain in covered roll-off containers near the excavation site until analytical data are available. If soil is stored in roll-off containers, it will be covered with a plastic liner or other protective cover at the end of every work shift. Soil stabilization measures will be implemented according to Section 4 of this MMP.

The Environmental Department must be contacted to remove the roll-off. BAE NSR uses vendors to transport the roll-off to the selected disposal facility, as deemed appropriate by the analytical results. The disposal facility is required provide the Environmental Department with a copy of the final disposal documentation.

Contaminated soil will be disposed off-site in accordance with applicable State regulations as required by the 2011 SB. The off-site facility will be selected based on the testing results, at a disposal facility that is authorized to receive soils with the levels of constituents indicated by the soil sample testing. Records of testing and disposal will be kept on file with the RCRA Facility Investigation and Release Assessment documentation and will be available for USEPA and/or VDEQ review upon request.

### **4. SOIL STABILIZATION REQUIREMENTS**

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As part of the SB requirements, this MMP describes the soil stabilization requirements to minimize contact between storm water runoff and parcel soils (where constituents have been identified). The SB proposed two options for soil stabilization measures:

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- 1) The construction of berms to prevent storm water from flowing onto certain areas;
- 2) The construction of sumps with pumps to remove ponded water from low-lying areas.

BAE NSR may use both approaches; however, the facility is committed to constructing sumps to collect storm water during construction or excavation activities. The following describes BAE NSR's soil and management process.

Depending on the soil-disturbing activity, soil stabilization may be appropriate. Typically for excavations that encounter ground water (e.g., digging to a depth of 5 feet or below) or accumulation of storm water may be expected, the contractor is to use a pump, hose, and dewatering bag to filter accumulated water in the excavation pit. The use of such a pump, hose, and dewatering bag may be indicated on the plans or in the contract for major soil-disturbing projects. Instructions for the use, maintenance and disposal of the dewatering bag are included in plans or contract.

For other projects that may not include soil-disturbing that would encounter ground water or the accumulation of storm water, the use of a pump, hose, and dewatering bag will be evaluated on a case-by-case basis. For projects where such soil stabilizing equipment is not anticipated, the department or contractor doing the work must notify the Environmental Department if groundwater or storm water accumulates in the excavation site. For any soil-disturbing project, the Environmental Department is to be notified immediately if a sheen or oil is observed in the accumulated water in an excavation pit.

Silt and soil removed from the dewatering bag is to be placed in the container with other removed soils to undergo testing and disposal based on analytical results. Water flowing through the dewatering bag can be drained into containers or tanks. Collected water may be treated at the onsite wastewater treatment plant. If oil or other contaminants are suspected, the water may be tested and disposed of in accordance with the results from analytical testing.

Water pumped out must be placed in a drum or other appropriate container and may be taken to the onsite wastewater treatment plant. Sump water must be tested prior to disposal offsite. The results of the analytical test will determine where the water is disposed.

### 5. COMMUNICATION OF THE MMP

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Once the proper authorization for the new project has been granted by the Environmental Department, the BAE NSR employee or contractor must review this MMP and follow the requirements. Similarly, for projects in which soil will be disturbed and a roll-off is requested for soil containment, the BAE NSR employee or contractor must review this MMP. The BAE NSR employee or contractor shall review the Site Diagram (Figure 1) to evaluate if soil-disturbing activities will occur on or near the locations identified as containing potential constituents of concern. The employee and contractor must also review Appendices A-C which contains the HASP, SAP, and QAPP. The BAE NSR employee or contractor must provide the following information (in writing) to the Environmental Department:

- 1) Cut and fill plans for the project;
- 2) Erosion and sediment control plan;
- 3) Excavation plans that identify where intrusive work will be performed, and
- 4) Anticipated work schedule.

**FIGURE 1**

**Materials Management Plan**

**SITE DIAGRAM**

**BAE Systems Norfolk Ship Repair**

## **APPENDIX A**

### **Materials Management Plan**

### **HEALTH AND SAFETY PLAN**

### **BAE Systems Norfolk Ship Repair**



## APPENDIX A – MMP HEALTH AND SAFETY PLAN

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## APPENDIX A – MMP HEALTH AND SAFETY PLAN

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### 1. INTRODUCTION

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This Health and Safety Plan (HASP) has been developed to provide both general procedures and specific requirements to be followed by BAE Systems Norfolk Ship Repair (NSR) employees and subcontractor personnel while working on any projects in the facility that may involve excavations or other disturbance activities in areas that are known to have contaminated soils or in areas where soil contamination may possibly be suspected because of historical uses. Two specific sites, SWMU-105 and RA-115, were found to have soils contaminated with organic pollutants during the RCRA Facility Investigation (RFI) completed in 2010. These locations are identified in the facility site plan (Figure 1 in this Plan). This HASP identifies NSR procedures that have already been implemented and that will, if strictly followed, minimize exposures of NSR employees and contract personnel to hazardous substances that may be present in subsurface soils.

#### 1.1 Implementation of the HASP

The requirements and guidelines presented in this HASP are implemented by NSR's Environmental Department and Safety Department and, where appropriate, will be communicated to Contractors by the Subcontracts Department.

#### 1.2 Facility Description and Resources

BAE Systems Norfolk Ship Repair is located on the Elizabeth River in Norfolk, VA. The facility performs ship repairs and overhauls of commercial and government vessels, and has been in operation since 1915. Currently, the facility performs ship maintenance and repair activities.

BAE Systems Norfolk Ship Repair experiences a relatively mild climate. This mild climate is due to the proximity of the Chesapeake Bay and Atlantic Ocean. Annual temperatures are 60 degrees F and precipitation is 46 inches per year. Winds prevail from the southwest. However the area is subject to severe weather in the form of hurricanes and northeasters. The 100 year floodplain for this area is 8.5 feet above mean sea level.

#### 1.3 Key Personnel

##### 1.3.1 Project Organization

Personnel involved in the activities at BAE Systems Norfolk Ship Repair implicitly have a part in implementing the HASP. Among them, the Safety Manager, Environmental Manager, and Facilities Manager have specifically designated responsibilities as described below. Any of these managers have the authority to suspend field activities or otherwise limit exposures if the health or safety of any BAE Systems employees or contractors appears to be endangered or if activities in the facility represent a potential risk to the environment.

Key project personnel and their responsibilities with regard to the BAE Systems Norfolk Ship Repair activities are discussed below.

##### 1.3.2 Safety Manager

The Safety Manager and other Safety Department staff are responsible for the overall administration of NSR's Safety policies and procedures, the company's Occupational Health and Safety Plan, and NSR's OHSAS 180001 certification. In addition, the Safety Manager is responsible for a team of safety inspectors and Competent Persons.

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### **1.3.3 Environmental Manager**

The Environmental Manager and other Environmental Department staff are responsible for ensuring that NSR operates in consistent compliance with all local, state and federal environmental laws and regulations and operating permits issued by regulatory agencies. The Environmental Manager also has the lead on environmental emergency responses in accordance with the company's Integrated Contingency Plan.

### **1.3.4 Facilities Manager**

The Facilities Manager is responsible for maintaining the shipyard's entire infrastructure. In this role, the Facilities Manager is directly responsible for all excavation and other soil disturbance activities conducted by NSR personnel or subcontractors.

## **2. HEALTH AND SAFETY RISK ASSESSMENT AND CONTROLS**

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Norfolk Ship Repair is an OSHAS 18001-certified facility and the company maintains a multifaceted program for protecting the health and safety of all employees, contractors, government representatives, customers (primarily vessel crews) performing any type of work in the facility, including projects involving the excavation or disturbance of soils in areas of known or suspected soil or groundwater contamination. Human health and safety controls that specifically apply to projects involving soil removals or other surface or subsurface soil disturbances (e.g., installing new or repairing existing underground utilities, storm drain repairs, parking lot modifications) include, but are not limited to, the following:

### **2.1 Quality Management System Procedures and Other Controls**

#### **2.1.1 Hazard Identification, Risk Assessment and Determining Controls**

NSR has a formal procedure for identifying hazards in the shipyard, assessing the risks associated with these hazards, and defining appropriate controls (Hazard Identification, Risk Assessment and Determining Controls (HIRADC) (Procedure NOR-SP(96)-S20). The overall purpose of the HIRADC process is to understand hazards that might arise in the course of NSR's activities and to ensure that the risks to people arising from these hazards are assessed, prioritized and controlled to a level that is acceptable. The HIRADC Procedure describes the process for hazard identification, risk assessment, and the determination of necessary controls to reduce intolerable risk and to meet the objectives of the shipyard's OH&S Policy.

Utilizing the BAE Systems' Hazard Identification, Risk Assessment, & Determining Controls Form (NOR-F(96)-S58), NSR will identify hazards associated with excavating or otherwise disturbing soils in areas with previously-documented contamination (i.e., SWMU-105 and RA-114) or in areas where soil contamination may reasonably be expected based upon current or historical activities or some other criterion. The risks associated with the hazards identified and the appropriate controls to be used to mitigate the risks are also detailed on the HIRADC form.

NSR Safety Department and the Environmental Department personnel will monitor active excavation projects on a daily basis to ensure that controls implemented by the HIRADC process are effective at minimizing risk to human health and safety and preventing negative impacts to the environment.

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### 2.1.2 Health Hazard and Contaminant Control

For the purposes of subsurface soil disturbance activities in the shipyard, a “confined space” includes any excavated area that has limited or restricted means of entry/exit and is not designed for continuous human occupancy. Such confined spaces may have low oxygen or contain toxic or corrosive vapors that would require protective measures before entry.

NSR personnel who excavate soils in the shipyard and must work below grade while installing or repairing utilities or for other purposes must comply with the requirements of NSR’s Confined/Enclosed Space Entry procedure (NOR-SP(96)-S05). All subcontractors working at NSR are required to provide an affidavit certifying that their employees have had confined space entry training. Personnel (NSR employees and contractors) shall have the space tested by a Marine Chemist or Shipyard Competent Person for oxygen levels and chemical toxicity concentrations prior to entry and shall never work alone.

### 2.1.3 Respiratory Protection

NSR has a Respiratory Protection Program (NOR-SP(96)-S02). This procedure establishes the minimum requirements for the respirator protection of BAE Systems employees and subcontractor personnel and is consistent with the OSHA requirements of 29 CFR 1910.134. The program ensures that all personnel are fully trained in the proper selection and usage of respirators for use in confined spaces.

### 2.1.4 Emergency Evacuations

NSR has an Emergency Evacuations Procedure (NOR-SP(96)-S04) that details the safe evacuation of work areas in the event of a fire, flooding, collision, hazardous waste spill or other emergency situation. This procedure applies to all shipyard personnel, including contractors.

### 2.1.5 Medical Emergencies

NSR has a medical facility on-site that is staffed with an EMT. All medical emergencies shall be reported immediately to NSR’s Security Department (494-4370). Security will handle all external notifications appropriate to the particular emergency and will control vehicular or personnel traffic as necessary to ensure that emergency responders are not impeded when entering the shipyard. NSR personnel and contractors must not call 911 to report an injury or other medical emergency.

### 2.1.6 Personal Protective Equipment

Workers meeting the requirements of this HASP must wear personal protective equipment and clothing appropriate to their work task and potential exposure. The personal protective equipment (PPE) selected should be in accordance with the applicable provisions of Subpart I, 29 CFR Part 1910. Each individual must be trained in the use of this safety equipment before the start of field activities. Equipment and clothing will be cleaned and maintained in accordance with manufacturer's instructions and within the guidance of Subpart I, 29 CFR Part 1910 by project personnel. NSR Safety Department personnel will monitor the protective equipment maintenance procedures. If field measurements or observations indicate that an exposure to soil or groundwater contaminants is greater than the protection afforded by the equipment or procedures specified in this HASP, work will be stopped and workers will be removed until the exposure has been reduced and/or the level of protection provided has been increased. PPE may be upgraded based on air, soil, or water monitoring results, personal observations,

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or for other reasons at the discretion of the Safety Manager or Environmental Manager. The Safety Manager or Environmental Manager must also approve a downgrade of PPE.

### 2.1.6.1 Protective Equipment Description

The level of PPE is categorized as Level A, B, C, or D, based upon the degree of protection required. The following is a brief summary of the two levels – Levels C and D - that are most likely to be adequate for use on this site.

#### **Level C Protection:**

Level C is worn when the concentrations and types of airborne substances are known and NSR's criteria for using air-purifying respirators are met. When wearing Level C, a NIOSH-approved, full-face air purifying respirator with organic vapor cartridges and P100 particulate filters will be worn.

#### **Level C PPE consists of the following:**

- Chemical-resistant disposable coveralls. For this level of protection polyethylene-coated, Tyvek suits will be required. Suits will be one piece with elastic wristbands. Hoods will be required at the discretion of the NSR Safety Department.
- Gloves, outer, chemical-resistant (neoprene) (taped to the suit)
- Gloves, inner, chemical-resistant (neoprene or nitrile)
- Boots, outer, leather, steel toe and shank
- If necessary, disposable chemical resistant boot covers (neoprene or butyl rubber; taped to suit).
- Hard hat
- Hearing protection required when heavy equipment is operating or when working in noise hazardous areas, as determined by the NSR Safety Department.

#### **Modified Level C Protection**

Modified Level C protection, consisting of Level C protective equipment without the use of a respirator, will be worn initially during the trench investigations. However, respirators will be available for immediate use in the event that an upgrade to Level C protection, as specified by the action levels is required.

#### **Level D Protection:**

Level D is a work uniform affording minimal protection, used for nuisance contamination only.

#### **Level D PPE consists of the following:**

- Overalls (cloth) or long sleeve shirts and long pants.
- Apron (plastic) for splash protection as necessary
- Gloves (neoprene or leather)
- Boots or shoes, leather, steel toes and shank
- Optional chemical resistant boot covers (neoprene or butyl rubber)
- Safety glasses or chemical splash goggles
- Hard hat

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- Face shield when not wearing other eye protection.
- Hearing protection when working in noise hazardous areas, as determined by the NSR Safety Department.

### Modified Level D

Level D is worn when the concentrations and types of airborne substances are known and NSR's criteria for not using air-purifying respirators are met. When a level of skin protection above Level D is required, Modified Level D is worn. The following constitute Modified Level D equipment:

- Chemical-resistant clothing [chemical-splash suit, disposable chemical-resistant overalls (polyethylene coated Tyvek® or equivalent)]
- Coveralls
- Gloves, outer, chemical-resistant (neoprene)
- Gloves, inner, chemical-resistant (neoprene or latex)
- Boots, outer, leather, with steel toe and shank
- Optional chemical resistant boot covers (neoprene or butyl rubber)
- Hard hat
- Face shield and safety glasses
- Hearing protection when working in noise hazardous areas, as determined by the NSR Safety Department.

## 3. ENVIRONMENTAL RISK ASSESSMENT AND CONTROLS

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The Norfolk Ship Repair (NSR) Environmental Management System (EMS) provides a mechanism for environmental management throughout all areas and departments within the facilities located at the shipyard. Our environmental management system is intended to cover the environmental aspects which we can control and directly manage, and those we cannot control or directly manage but can be expected to have an influence. These aspects would include projects involving the excavation or disturbance of soils in area of known or suspected soil or groundwater contamination. The EMS also provides a means for evaluating and prioritizing the environmental concerns of the company so that we may concentrate our efforts on the highest priorities first. Environmental controls that specifically apply to projects involving soil removals or other surface soil disturbances include, but are not limited to, the following:

### 3.1 Hazard Identification, Risk Assessment and Determining Controls

NSR has a formal procedure for identifying environmental aspects and impacts in the shipyard, assessing the risks associated with these hazards, and defining appropriate controls (Identification of Environmental Aspects, Impacts and Determining Significance NOR-SP(96)-V08). The overall purpose of the aspect/impact process is to understand environmental hazards that might arise in the course of NSR's activities and to ensure that the risks to the environment arising from these hazards are assessed, prioritized and controlled to a level that is acceptable. The aspect/impact procedure describes the process for environmental hazard identification, risk assessment, and the determination of necessary controls to reduce intolerable risk and to meet the objectives of the shipyard's SHE Policy.



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Utilizing the BAE Systems' Identification of Environmental Aspects and Impacts Form (NOR-F(96)-V54) and the Project Environmental Review Checklist (NOR-F(96)-V56), NSR will identify environmental aspects associated with excavating or otherwise disturbing soils in areas with previously-documented contamination (i.e., SWMU-105 and RA-114) or in areas where soil contamination may reasonably be expected based upon current or historical activities or some other criterion. The Project Environmental Review Checklist will be used when a process is changed or a new process/project (e.g. construction project involving excavation) is implemented. The environmental risks associated with the hazards identified and the appropriate controls to be used to mitigate the risks are also detailed on the aspect and impact form. This form also documents any monitoring and measuring that is conducted to ensure that the negative environmental impact is minimal or eliminated.

NSR Safety Department and the Environmental Department personnel will monitor active excavation projects on a daily basis to ensure that controls implemented by the HIRADC and aspect/impact process are effective at minimizing risk to human health and safety and preventing negative impacts to the environment.

### 3.2 Environmental Spills

Chemical spills or other environmental emergencies shall be reported immediately to NSR's Security Department (494-4370), who will then notify the shipyard's Environmental Department. Spill containment and cleanup will be managed as detailed in NSR's Integrated Contingency Plan. The Environmental Department is responsible for any external notifications to the National Response Center, U.S. Coast Guard, Virginia Department of Environmental Quality (VDEQ), and/or other regulatory agencies. NSR's Security will handle any notifications to the local fire department and will control vehicular or personnel traffic as necessary to ensure that emergency responders are not impeded when entering the shipyard. NSR personnel and contractors must not call 911 to report an injury or other medical emergency.

In the event that petroleum residues are encountered during a soil excavation, NSR Environmental will be responsible for reporting the situation to VDEQ.

## 4. REFERENCES

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- Norfolk Ship Repair Occupational Health and Safety Plan
- Hazard Identification, Risk Assessment and Determining Controls (NSR Procedure NOR-SP[96]-S20)
- Confined/Enclosed Space Entry (NSR Procedure NOR-SP[96]-S05)
- Respiratory Protection Procedure (NSR Procedure NOR-SP[96]-S02)
- Emergency Evacuations Procedure (NSR Procedure NOR-SP[96]-S04)
- Hazard Identification, Risk Assessment and Determining Controls Form (NSR Form NOR-F[96]-S58)
- Norfolk Ship Repair Environmental Management System
- Identification of Environmental Aspects, Impacts and Determining Significance (NSR Procedure NOR-SP[96]-V08)
- Identification of Environmental Aspects and Impacts Form (NSR Form NOR-F[96]-V54)
- Project Environmental Review Checklist (NSR Form NOR-F[96]-V56)
- 29 CFR 1910

## **APPENDIX B**

### **Materials Management Plan**

#### **SAMPLING, ANALYSIS AND QA/QC PLAN**

##### **BAE Systems Norfolk Ship Repair**



## APPENDIX B – MMP SAMPLING, ANALYSIS AND QA/QC PLAN

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## **APPENDIX B – MMP SAMPLING, ANALYSIS AND QA/QC PLAN**

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### **1. INTRODUCTION**

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#### **1.1 General Plan**

The purpose of this Sample and Analysis Plan (SAP) is to describe the basic procedures that will be used during implementation of activities covered by NSR's Materials Management Plan. The SAP provides detailed procedures for collecting environmental samples including equipment and personnel requirements, sampling protocol, and waste management practices for the handling of contaminated soils, groundwater or storm water runoff at excavation sites in the facility.

### **2. SAMPLING PROCEDURES**

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#### **2.1 General**

The SAP is an essential part of the Materials Management Plan in that it stipulates the field sampling procedures that will be followed during activities that disturb potentially contaminated surface or subsurface soils at the BAE Systems Norfolk Ship Repair facility, as well as any excavation projects that expose contaminated groundwater or create the potential to contaminate groundwater or storm water runoff.

##### **Field Sampling Equipment Requirements:**

The appropriate quantity and type of sampling equipment will be determined based on the particular soil disturbance activity scheduled to be performed. In most cases, Norfolk Ship Repair will contract the services of a geologist, hydrologist, and/or industrial hygienist to provide oversight for soil and groundwater sampling or to ensure that human health and safety protections are in place during excavations of contaminated soils or water. Any calibrations of field sampling or monitoring equipment and decontamination of equipment will be the Contractor's responsibility.

#### **2.2 Environmental Sample Collection Methods**

##### **2.2.1 Surface and Near Surface Soil**

Surface soil (0 to 6-inches) and near surface soil (6 to 12-inches) samples will be collected using decontaminated stainless steel trowels, stainless steel bucket auger, plastic scoops, split barrel sampling device, or dedicated sampling tools. Soil samples will be obtained in accordance with the following procedures:

- 1) Prior to initiating sampling activities at a sample location, place ground plastic immediately adjacent to the sample location to prevent equipment from coming into contact with objects other than the soil to be sampled.
- 2) Remove surface materials that are not to be included in the samples (e.g., rocks, twigs, leaves, asphalt).
- 3) Label sample containers with the sample location, date, and required analysis. The sample container types and required volumes will be determined by the laboratory in accordance with the specific analyses requested.
- 4) Don new nitrile gloves.

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- 5) Obtain sufficient quantity of soil sample for the proposed analyses. Samples will be obtained from the inner portion of the core/hole, avoiding soil that has contacted the outer walls of the sampler. This prevents the inclusion of soil that has smeared along the wall of the sampler during collection, potentially biasing the distribution of constituents in this portion of the core.
- 6) Place the sample container(s) in a cooler. Depending on the required analysis, coolers may require wet ice and/or ice packs for transport to the laboratory. Pack the sample container(s) to minimize the potential for breakage.
- 7) Mark the sample location and document the sample location on a site map, log book or sample Chain of Custody form.

### 2.2.2 Subsurface Soil

#### 2.2.2.1 General

Soil boring activities, if required, will be performed by a Contractor, not NSR personnel. Oversight for these operations will be provided by a qualified geologist and/or hydrogeologist who will be in attendance during the boring activities to:

- Perform any necessary air quality monitoring
- Inspect and classify soil
- Prepare geologic field logs based on soil observations
- Obtain soil samples for laboratory analysis
- Complete drilling records

#### 2.2.2.2 Subsurface Soil Sample Collection

If necessary, subsurface soil (greater than 1 ft in depth) samples will be collected to characterize the geologic nature of the area of investigation and to establish the presence (or absence) and magnitude of constituent concentrations in soils to be excavated in the facility.

Soil samples will be described and the descriptions recorded. Boring logs describing subsurface materials encountered in the borings will be prepared by the on-site geologist or hydrogeologist. Descriptions of soil sample texture, composition, color, consistency, moisture content, and recovery will also be recorded. Soil samples will be classified in accordance with the Modified Wentworth Soil Classification System or the Unified Soil Classification System. Soil samples for laboratory analysis will then be obtained in accordance with the steps outlined in Section 2.2.1 above.

### 2.2.3 Groundwater

Groundwater samples may be collected if contamination may be suspected at an excavation site due to historical industrial activities or directly observed during soil disturbances and exposure to groundwater contaminants may represent a risk to human health. The appropriate techniques for collecting the groundwater samples will be determined by a technically competent person contracted by NSR.

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### 2.3.3.1 Conventional Sampling Techniques

#### ■ Sampling Equipment

Sampling equipment may vary depending on sample location, objective, contaminants, and analyses. Below presents a list of typically used sampling equipment.

- » Personal protective equipment (e.g., steel-toed work boots, nitrile gloves, safety glasses)
- » Insulated sample coolers containing prepared sampling containers, preservatives, and wet ice
- » Water level indicators
- » Plastic sheeting
- » Plastic wrap for decontaminated bailers, if required
- » Distilled or deionized water
- » Paper towels
- » Ziplock® Bags
- » Suction-lift pump and ¾-inch polyethylene tubing for well purging, if required
- » Dedicated Teflon® or PVC bailers, if required
- » Dedicated one-way foot valves, if required
- » Peristaltic pump and Tygon® tubing, if required
- » Submersible pump, support cable, and appropriate tubing, when needed.
- » Bladder pump, tubing, and compressed gas or compressor, as needed
- » Phosphate-free detergent

#### ■ Documentable Equipment

- » Sample labels
- » Waterproof pens
- » Chain-of-custody forms
- » Custody seals, if required
- » Field notebook
- » Field data sheets (optional).

#### ■ Miscellaneous Equipment

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- » Sample Collection Methods and Procedures Plan
- » Health and Safety Plan
- » Well keys
- » Calculator (optional).

As previously noted, selection of the sampling equipment and sample containers appropriate for a particular project will be the responsibility of the technically qualified persons overseeing that activity. These individuals will also handle inspections of all equipment to verify that it is in working order and decontamination of the sampling equipment, as appropriate.

### **3. MANAGEMENT OF CONTAMINATED SOILS OR WATER FROM EXCAVATIONS**

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#### **3.1 General**

Facility projects that disturb surface or subsurface soils, including excavations for utility work, may generate soils, groundwater, or storm water runoff contaminated with organic constituents. If these materials are removed from areas of known or suspected contamination, the soils or water will be segregated and held pending results of laboratory analyses to determine hazardous characteristics prior to reuse, treatment (onsite or offsite), or offsite disposal. The generator of potentially contaminated soils must submit a Roll-off Container Request Form (NOR-F[96]-V56) to NSR's Environmental Department at least 24 hours prior to excavating the soils. The Environmental Department will then arrange to have a container with plastic liner delivered to the work site.

Generally, solid materials will be tested using a Toxicity Characteristic Leachate Procedure (TCLP), but other analytical procedures may also be used if suggested by the onsite technical expert, NSR's contract laboratory, or a treatment or disposal facility that may be used if the materials require special handling.

The specific type of lab procedures to be used for analyzing groundwater or storm water collected from an excavation site will be determined by the onsite technical expert or laboratory professional. In most cases, contaminated groundwater or storm water can be treated onsite at NSR's wastewater treatment plant.

### **4. QUALITY CONTROL FOR SOIL AND WATER SAMPLING AND ANALYSIS**

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#### **4.1 General**

Quality Control (QC) of both field sampling efforts and laboratory analyses is an integral part of NSR's Materials Management Plan. Norfolk Ship Repair will require field sampling personnel (i.e., Contractors) to implement proper QC in the planning, preparation and execution of all activities associated with field sampling for soil or groundwater contaminants. Appropriate levels of QC will also be used for handling field samples and the tracking of samples sent to contract laboratories for analysis. BAE Systems' Laboratory Chain of Custody form (NOR-F(96)-V18) or a similar document provided by the laboratory will be used for logging in and tracking the movement of all field samples through the analytical process. Likewise, NSR will expect all contract laboratories to maintain active QA/QC programs for analytical work.

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### 5. REFERENCES

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- Roll-off Container Request Form (NSR Form NOR-F[96]-V56)
- Laboratory Chain of Custody Form (NSR Form NOR-F[96]-V18)